



# UNITED STATES PATENT AND TRADEMARK OFFICE

A

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,937	06/26/2003	Ichirou Miyagawa	Q76019	3417
23373	7590	02/14/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/603,937	<b>Applicant(s)</b> MIYAGAWA, ICHIROU	
	<b>Examiner</b> Hai C. Pham	<b>Art Unit</b> 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-16, 18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-16, 18 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims **11**, **12** and **13** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims **5**, **7** and **10**, respectively, of copending Application No. **10/263,697** (Pub. No. 2003/0068126) in view of Gao et al. (Pub. No. U.S. 2003/0151820).

This is a provisional obviousness-type double patenting rejection.

Current application 10/603,937

Copending Application No. 10/263,697

11. An exposure apparatus for forming an image on a recording medium by scanning	5/4. An exposure device for forming an image on a recording medium via scan-
--	--

exposure, the apparatus comprising: a light source for ejecting a light beam emitted in a broad area for <i>at least a main-scanning direction</i> ,	exposure, said device comprising: a light source for emitting light beams in a broad area <i>at least in a sub-scanning direction</i> ;
a condensing optical system for condensing the light beam emitted from the light source on the recording medium,	a condensing optical system for condensing the light beams emitted from the light source onto the recording medium;
an array refracting element which is disposed between the light source and the recording medium so that a direction, is substantially parallel to the broad area direction of the light beam emitted from the light source,	an array refracting element disposed between the light source and the recording medium so that a direction in which the light beams are divided is substantially parallel to a broad area direction of the light beams emitted from the light source,
wherein the array refracting element includes a refracting member having a unit surface shape dividing one light beam into two light beams by ejecting the one incident light beam toward different positions.	the array refracting element comprising a pair of refracting members disposed in an array, wherein each of the refracting members has a surface shape for dividing one light beam into two,  wherein the surface shape divides one incident light beam in mutually different angular directions and emits the divided

	light beams.
12. wherein the array refracting element is disposed at a position at which a far field pattern of the light beam emitted from the light source is formed.	6. wherein the array refracting element is disposed at a position where a far field pattern of the light beam emitted from the light source is formed.
13. <i>an inputting component</i> for inputting resolution information showing resolution of an image formed on the recording medium by the scanning exposure; and a <i>moving component</i> in which the array refracting element is removed from the optical axis of the light beam emitted from the light source when the resolution shown by the resolution information is a predetermined first resolution, and the array refracting element is moved so as to be placed on the optical axis when the resolution shown by the resolution information is a second resolution which is lower than the first resolution.	10. <i>an input section</i> into which resolution information indicating a resolution of an image to be formed on the recording medium via scan-exposure is inputted; and a <i>conveyor</i> for moving the array refracting element so that the array refracting element is removed from an optical axis of the laser beams emitted from the light source when the resolution indicated by the resolution information is a predetermined first resolution, and the array refracting element is positioned on the optical axis when the resolution indicated by the resolution information is a second resolution that is lower than the first resolution.

Claim 5 of the copending Application No. 10/263,697 teaches "a light source for emitting light beams in a broad area *at least* in a sub-scanning direction", meaning that the light source also emits light beams in a broad area in the main scanning direction.

However, Claim 5 of the copending Application No. 10/263,697 fails to teach the array refracting element being configured to arrange the two refracting members in at least two pair units in an array shape in a direction orthogonal to a light beam dividing direction.

Gao et al. discloses in Fig. 10A a refracting optical system for shaping light emitted from a laser light source, the refracting optical system (prism P) comprising two pairs of refracting members (P) arranged along the x-direction and dividing the incident light beam into four light beams shifted in the y-direction orthogonal to the arrangement direction of the prisms P (Fig. 10C) (see paragraphs [0094]-[0095]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate at least two pairs of refracting members in the device as claimed in claim 5 of the copending Application No. 10/263,697 as taught by Gao et al. The motivation for doing so would have been to split the incident light beam into plural light beams forming a higher printing resolution.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2861

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11-13, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa (U.S. 6,380,966) in view of Gao et al.

Miyagawa discloses an exposure recording device comprising a light source (LD, Fig. 12) for ejecting a light beam emitted in a broad area for at least a main-scanning direction, a condensing optical system (42) for condensing the light beam emitted from the light source on the recording medium (F), an array refracting element, which includes a refracting member (64, Figs. 12-13) having a unit surface shape for dividing one light beam (L) into two light beams (L1 and L2) by ejecting the one incident light beam toward different positions (on the recording film F), wherein the array refracting element is configured to arrange the two refracting members in pair unit in an array shape for dividing the incident light beam into two light beams (the prism 64 having a pair of exit surfaces 66a and 66b slanted in the auxiliary scanning direction indicated by the arrow Y).

Miyagawa fails to teach the refracting members being arranged in at least two pair units in an array shape in a direction orthogonal to the light beam dividing direction.

Gao et al. discloses in Fig. 10A a refracting optical system for shaping light emitted from a laser light source, the refracting optical system (prism P) comprising two pairs of refracting members (P) arranged along the x-direction and dividing the incident light beam into four light beams shifted in the y-direction orthogonal to the arrangement direction of the prisms P (Fig. 10C) (see paragraphs [0094]-[0095]).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate at least two pairs of refracting members in the device as claimed in claim 5 of the copending Application No. 10/263,697 as taught by Gao et al. The motivation for doing so would have been to split the incident light beam into plural light beams forming a higher printing resolution.

Miyagawa also teaches:

- the array refracting element (prism 64) is disposed at a position at which a far field pattern of the light beam emitted from the light source is formed (the prism 64 being disposed closed to the recording medium F) (Fig. 12),
- an inputting component for inputting resolution information showing resolution of an image formed on the recording medium by the scanning exposure (the resolution data being inputted into the control circuit 49) (Fig. 4), and a moving component in which the array refracting element is removed from the optical axis of the light beam emitted from the light source when the resolution shown by the resolution information is a predetermined first resolution (resolution  $S = 2.K0$  dpi), and the array refracting element is moved so as to be placed on the optical axis when the resolution shown by the resolution information is a second resolution (resolution  $S = K0$  dpi), which is lower than the first resolution (the prism being moved in and out of the path of the optical axis of the light beam for changing the resolution) (Fig. 12),
- two refracting members (66a, 66b) in pair unit that divides the same incident light beam being split in two directions (Fig. 13),



- the resolution (2-KO dpi) would be conformed to the claimed relationship (Fig. 16).

5. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa in view of Gao et al. and Fujita et al. (U.S. 6,108,283).

Miyagawa, in view of Gao et al. (see rejection of the similar claimed limitations in paragraph 4 above), discloses all the basic limitations of the claimed invention including a multiple exposure head (82) (Miyagawa, Fig. 15) comprising a plurality of exposure units (84a-84g), but except for the two refracting members having at least one of which is formed as a diffracting member.

Fujita et al. discloses in Figs. 25A-B an array refracting element (light beam dividing element 71) comprising a refracting member (64, Fig. 13) having a unit surface shape for dividing one light beam into two light beams (Fig. 25B) by ejecting the one incident light beam toward different positions (in the y-direction), wherein the array refracting element is configured to arrange the two refracting members (72 and 73) in pair unit in an array shape in a direction orthogonal to a light beam dividing direction (light beam dividing element 71 having two refracting members consisting of the transparent flat plate 72 and the wedge-shaped element 73 arranged in the x-direction orthogonal to light beam dividing y-direction). Fujita et al. further teaches in Fig. 5 the light beam dividing element (34) having a diffraction grating area (34a) and a transparent flat area (34b) for dividing the incident beam into substantial parts having the same size and shape.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a diffraction grating portion in the light beam dividing member of Miyagawa as taught by Fujita et al. The motivation for doing so would have been to obtain divided light beams of the same size and shape as suggested by Fujita et al.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 11-16, 18 and 20 have been considered but are moot in view of the new grounds of rejection.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM  
PRIMARY EXAMINER

February 10, 2006